

# BIRGIT

# Benefits and Challenges using BIM

Ariana Kubart

[Ariana.kubart@ocellus.se](mailto:Ariana.kubart@ocellus.se)



## Learning Outcomes

At the end of this lecture, the learner is expected to be able to:

- Explain differences between CAD and BIM
- Understand role of BIM in diverse phases of building life-cycle
- Discuss factors slowing down BIM implementation

## CAD versus BIM I

### CAD – Computer Aided Design

- focus lies on geometry, defined in points, curves, surfaces and solid volumes

### BIM – Building Information Modelling

- virtual model with much additional information
- system for cooperation and data-sharing



Source: <https://www.cadtobim.com/what-is-bim.html>

## CAD versus BIM II

### TRADITIONAL CAD

#### Focused on Documents

The initial focus of traditional CAD is on the production of drawings as opposed to the design.

#### High risk of data loss

Key data is lost as it moves between the multiple project stages and various stakeholders.

#### Unresponsive to change

Changes late in the design process are often difficult and time-consuming to make.

#### Not easily accessible

Project information is housed in several locations and in many different file formats.



What's the focus?



How much data  
is retained?



How easy is it  
to make changes?



How accessible  
is the data?

### BIM

#### Focused on Design

BIM allows the design to be the initial focus which allows for a better design and improves overall quality.

#### Key information retained

Data loss is prevented and key information retained between every stage of the process and every party involved.

#### Highly responsive to change

BIM allows for much more flexibility. Changes are easy to make with updates quickly communicated to all stakeholders.

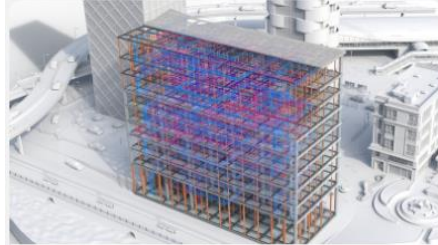
#### Data accessible anywhere

Project information is easily available to all stakeholders anywhere, at anytime.

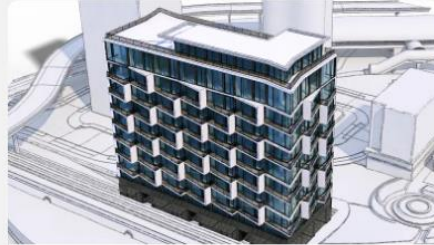
Source:  
<https://www.sanveo.com/wp-content/uploads/2022/01/BIM-vs-Traditional-CAD.png>

## Building / Facility Life Cycle

- several distinct phases, new buildings planned for 100 years
- each phase involves different activities and stakeholders
- ensuring that the building is safe, functional, and sustainable



Plan



Design



Build



Operate

Source: <https://www.autodesk.com/solutions/aec/bim/benefits-of-bim>



## BIM Benefits in Design and Construction I

- Many experts participating on any project
- Cooperation
- Data sharing
- Model checks
- Solving problems that would otherwise appear first on the construction site



Source - <https://bimcorner.com/benefits-of-using-bim-technology/>

## BIM Benefits in Design and Construction II

### Benefits of BIM in Construction



Potential problems are **identified prior to construction**.



Construction processes can be **optimized using 3D models**.



Modeling software can discover **opportunities for automation**.



Project dependencies are determined to **improve scheduling efficiency**.



Worker safety is improved by **clearly noting risks for each task**.

BIM speeds up project times about 20-50%, compared to traditional CAD approach

Estimation of cost and impacts of different design choices

Several teams can work on the same model, immediate changes

Source: <https://acropolis-wp-content-uploads.s3.us-west-1.amazonaws.com/what-is-bim-2.png>



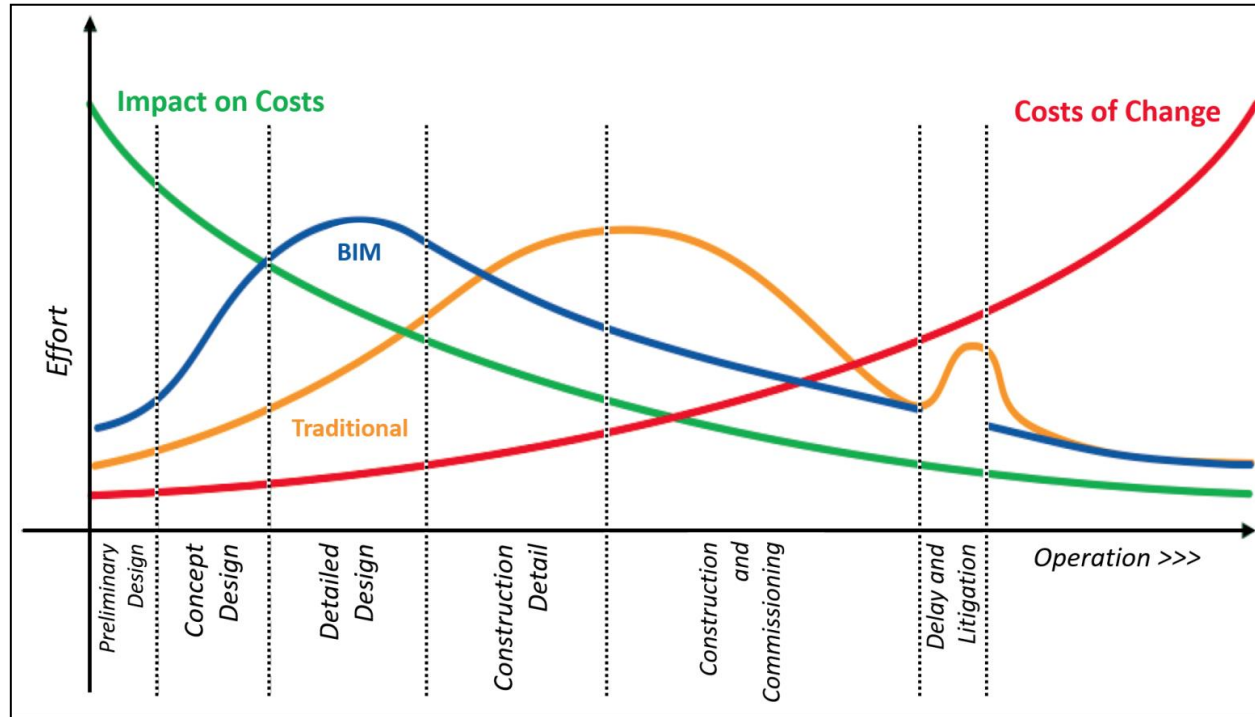
## BIM benefits for Facility Management (FM) I



- Operation can take up to a hundred years
- Updates, renovation and repairs are necessary
- Older buildings – documentation as drawings and/or .pdf files
- New buildings – optimally have “as-built” BIM model with info optimized for FM

<https://www.advenser.com/wp-content/uploads/2022/10/bim-for-fm.jpg>

## BIM benefits for Facility Management (FM) II



- Without “as-built” model, lot of information disappears, especially between the construction and operation
- BIM effort and cost is high in the beginning, but lower in long term

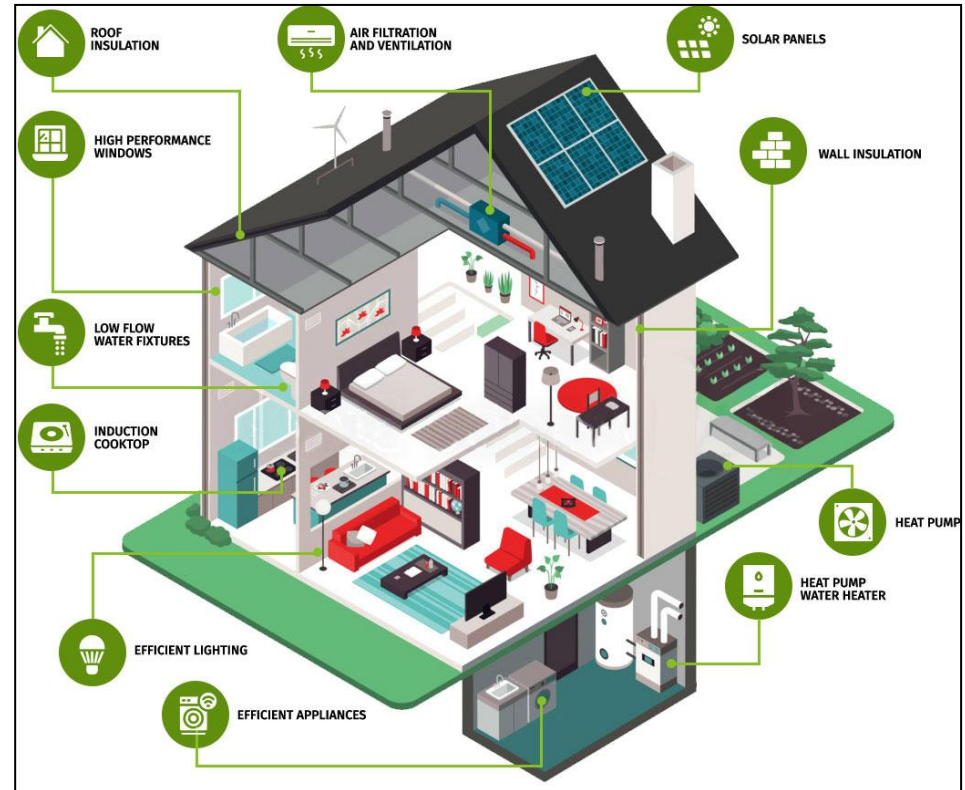
Source: [https://iea-annex60.org/finalReport/\\_images/BIM-vs-CAD.png](https://iea-annex60.org/finalReport/_images/BIM-vs-CAD.png)

## Reducing environmental impact with BIM

Both energy and material  
savings

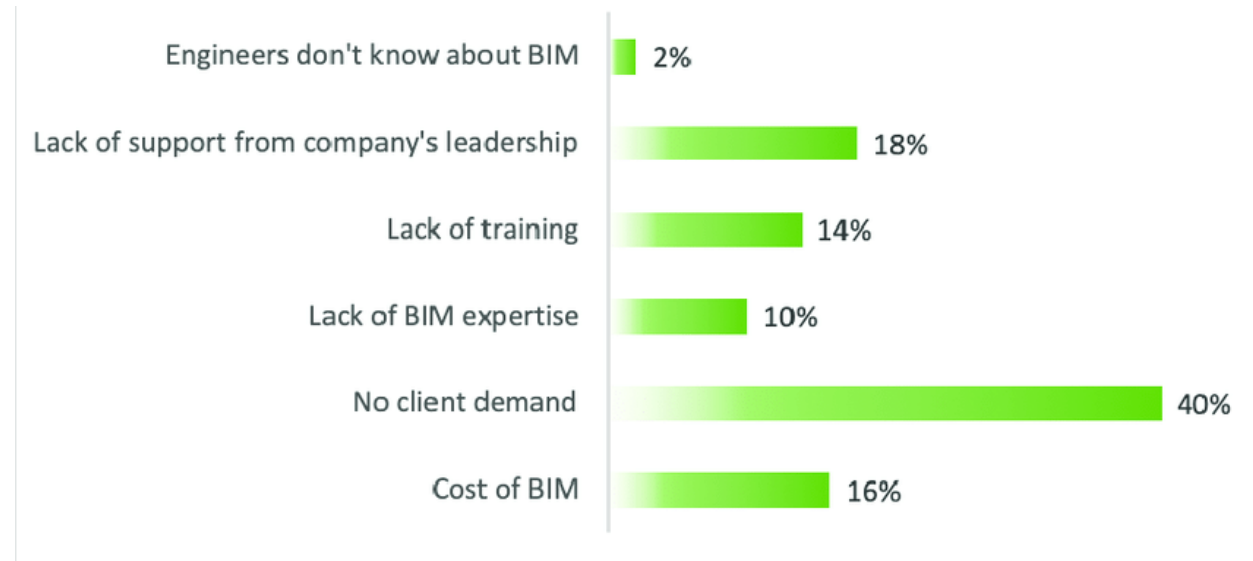
- Alternative material
- On-site logistics
- Exact need of materials
- Re-use of materials after renovation /demolition

[https://www.elogictech.com/uploads/uploaded\\_images/1556103413\\_green-building-01.jpg](https://www.elogictech.com/uploads/uploaded_images/1556103413_green-building-01.jpg)



## Challenges of using BIM I

- There are issues slowing down BIM implementation...



<https://www.researchgate.net/profile/Amged-Abdelatif/publication/341138684/figure/fig1/AS:887642250027010@1588641812177/The-challenges-of-using-BIM.png>

## Challenges of using BIM II



... but there are also strategies how to deal with the challenges, e.g. open BIM and free BIM education

**Thank you for your attention**



<https://birgitproject.eu/>